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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,186	01/29/2001	Lawrence Bernard Kool	RD-28,011	7166

6147 7590 08/14/2002

GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH CENTER
PATENT DOCKET RM. 4A59
PO BOX 8, BLDG. K-1 ROSS
NISKAYUNA, NY 12309

EXAMINER

SMETANA, JIRI F

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 08/14/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/771,186	Applicant(s) KOOL ET AL.	
	Examiner Jiri F. Smetana	Art Unit 1746	

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed. See the Notice of Draftperson's Patent Drawing Review.

Claim Objections

2. Claim 1 is objected to because of the following informalities:

Examiner suggests in replacing [the] between "from" and "surface" with --a-- in line 1 of claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 9, 10, 12, 15-19, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Sullivan et al., GB 2115013A.

The claimed invention reads on Sullivan as follows: Sullivan discloses a method for removing an oxide material from a surface of a substrate or a coating disposed on the substrate comprising the step of contacting the oxide material with an aqueous composition which comprises a precursor to an acid having the formula H_XAF_6 , wherein A is Al and X is 3 (page 2, lines 47-55); wherein the acid present at a level in the range of about 0.2 M to about 3.5 M (page

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2, lines 50-53); wherein the aqueous composition further comprises at least one additional acid or precursor thereof (page 2, lines 23-36); wherein the additional acid is sulfuric acid (page 2, lines 30-36); wherein the additional acid is present at a level within the range of about 20 mole% to about 70 mole % (page 2, lines 30-36); wherein the bath is maintained at a temperature in the range of about 48°C to about 82°C (page 1, lines 50-52); wherein the bath further comprises at least one additive of a surfactant (page 2, line 56 - page 3, line 8); wherein the coating removed is diffusion coating or an overlay coating (page 1, line 56 - page 2, line 11); wherein the coating is applied by the technique of air plasma spray (page 2, line 17-22); and wherein the substrate is a metallic material (page 1, lines 3-6).

The elements in the claims are reads in the reference.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6, 14, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan as applied to claims 1-5, 9, 10, 12, 15-19, 22, and 23 above, and further in view of Awad, U.S. Patent no. 5,030,323.

Recitation of Sullivan is repeated here from above.

Sullivan does not disclose wherein the aqueous composition comprises the compound H_2ZrF_6 or wherein the additional acid is phosphoric acid. However, Awad discloses wherein the

aqueous composition comprises the compound H_2ZrF_6 (column 2, lines 47-60) and wherein the additional acid is phosphoric acid (column 2, lines 31-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove an oxide material from the surface of a metal substrate with the compound H_2ZrF_6 and with an additional acid of phosphoric acid because Awad teaches H_2ZrF_6 and phosphoric acid serves as a metal etching components (column 2, lines 57-60) and are effective and advantageous in conditioning a metal surface without harming the reflectivity, printability, or adherence of lacquer to the treated surface (column 1, lines 56-68). Awad also teaches that phosphoric acid, nitric acid, sulfuric acid, hydrochloric acid, hydrofluoric acid, and salts thereof, are functionally equivalent as metal etching components (column 2, lines 30-40).

As to claim 25, it would have been obvious to one of ordinary skill in the art at the time the invention was made to remove an oxide material or coating from a surface with an additional acid being present at a level less than about 80 mole% because Sullivan teaches that the additional acid has a concentration of 90 to 450 g/L or as much as 90% of the entire solution (page 2, lines 23-36). Further, a change in concentration or pH would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art. Such ranges are termed critical ranges and the applicant has the burden of proving such criticality. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller* 105 USPQ 233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re*

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Scherl 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934). Concentration limitations are obvious absent a showing of criticality. *Akzo v. E.I. du Pont de Nemours* 1 USPQ 2d 1704 (Fed. Cir. 1987).

As to claim 26, Examiner takes official notice that an oxide material is initially present in at least one cavity within the turbine engine component because Sullivan teaches each layer is subject to severe high temperature oxidation environments (page 1, lines 56-60) wherein such severe conditions would naturally create microscopic cavities along the metallic surface.

7. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan and Awad as applied to claims 1-5, 6, 9, 10, 12, 14-19, and 22-26 above, in view of Matsuno et al., U.S. Patent No. 6,261,969.

Recitation of Sullivan and Awad are repeated here from above.

Neither Sullivan nor Awad disclose wherein the H_2SiF_6 compound is formed in situ within the aqueous composition by the dissociation of a corresponding salt of the compound or by the reaction of a silicon-containing compound with a fluorine-containing compound, wherein the silicon-containing compound is SiO_2 and the compound is HF. However, Matsuno discloses wherein the H_2SiF_6 compound is formed in situ within the aqueous composition by the dissociation of a corresponding salt of the compound or by the reaction of a silicon-containing compound with a fluorine-containing compound, wherein the silicon-containing compound is SiO_2 and the compound is HF (column 4, line 63 - column 5, line 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove an oxide material from the surface of a substrate wherein the H_2SiF_6 compound is formed in situ within the aqueous composition by the dissociation of a corresponding salt of the compound or by the reaction of a silicon-containing compound with a fluorine-containing compound, wherein the silicon-containing compound is SiO_2 and the compound is HF because Matsuno teaches the thin oxide film can be separated smoothly from the substrate (column 5, lines 25-30) and the etching rate of the silicon oxide film can be improved by raising the concentration of HF_2^- ions in the hydrofluoric acid solution (column 4, line 65 - column 5, line 1).

8. Claims 10, 11, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan, as applied to claims 1-5, 9, 10, 12, 15-19, 22, and 23 above.

Recitation of Sullivan is repeated here from above.

Sullivan does not explicitly disclose wherein the additional acid has a pH is less than about 3.5 in pure water, wherein the treatment time is in the range of about 60 minutes to about 72 hours, or where the treatment time is in the range of about 60 minutes to about 20 hours. However, Sullivan discloses wherein the additional acid has a concentration of 90 to 450 g/L or as much as 90% of the entire solution (page 2, lines 23-36), continuing the contacting until the hard coating has been substantially removed from the metal surface without any dimensional change occurring to the underlying surface (page 3, lines 13-15), and examples of treatment times of between 10 to 20 hours using another fluorine containing species (page 3, lines 27-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to removing an oxide material or coating from a surface with an additional acid having

a pH less than about 3.5 in pure water, and a treatment time between about 60 minutes and about 72 hours or between about 60 minutes and about 20 hours because Sullivan teaches that the additional acid has a concentration of 90 to 450 g/L or as much as 90% of the entire solution (page 2, lines 23-36), contacting the surface is continued until the hard coating has been substantially removed from the metal surface without any dimensional change occurring to the underlying surface (page 3, lines 13-15), and working examples of various treatment times of between 10 to 20 hours using another functionally equivalent fluorine containing species (page 3, lines 27-44). Further, a change in concentration, pH, or time would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art. Such ranges are termed critical ranges and the applicant has the burden of proving such criticality. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller* 105 USPQ 233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmscher* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945); *In re Swenson* 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934). Concentration limitations are obvious absent a showing of criticality. *Akzo v. E.I. du Pont de Nemours* 1 USPQ 2d 1704 (Fed. Cir. 1987).

9. Claims 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sullivan as applied to claims 1-5, 9, 10, 12, 15-19, 22, and 23 above, in view of Grunwald, U.S. Patent No. 3,373,114.

Recitation of Sullivan is repeated here from above.

Sullivan does not disclose applying a new coating to the substrate. However, Grunwald discloses applying a new coating to the substrate (column 1, lines 12-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a new coating to the substrate because Sullivan teaches that metal surfaces are treated for the purpose of preparation for subsequent finishing (column 1, lines 12-24).

It is immaterial whether the oxide material is removed from the surface first, the coating disposed on the substrate is removed second, or both layers are removed simultaneously because the performance of two steps simultaneously, which have previously been performed in sequence was held to have been obvious. *In re Tatincloux* 108 USPQ 125 (CCPA 1955). Also, the transposition of process steps or the splitting of one step into two, where the processes are substantially identical or equivalent in terms of function, manner and result, was held not to patentably distinguish the processes. *Ex parte Rubin* 128 USPQ 440 (PTO BdPatApp 1959).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jiri F. Smetana whose telephone number is (703)605-1173. The examiner can normally be reached on Monday-Friday (7:30am-4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (703)608-4333. The fax phone numbers for

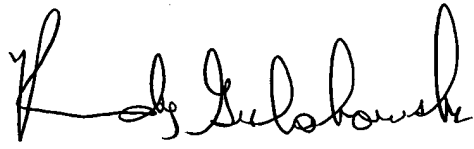
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the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

Jiri F. Smetana
Patent Examiner
Art Unit 1746

jfs
August 8, 2002



RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700